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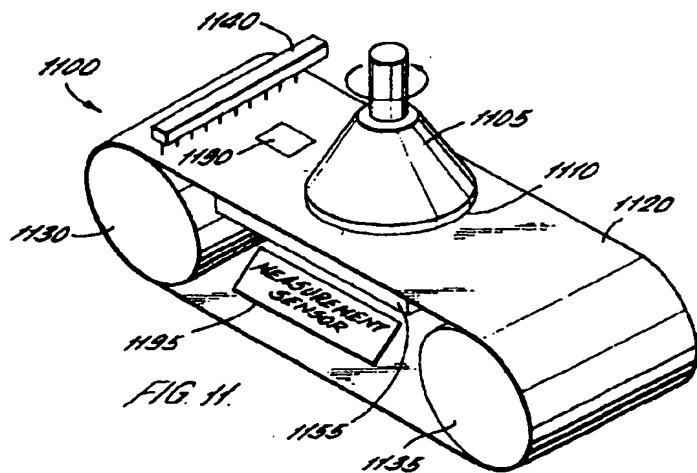
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### (54) Wafer polishing device with moveable window

(57) A wafer polishing device with movable window can be used for in-situ monitoring of a wafer during CMP processing. During most of the CMP operation, the window remains below a polishing surface of a polishing device to protect the window from the deleterious effects of the polishing process. When the window moves into position between the wafer and a measurement sensor, the window is moved closer to the polishing surface. In

this position, at least some polishing agent collected in the recess above the window is removed, and an in-situ measurement can be taken with reduced interference from the polishing agent. After the window is positioned away from the wafer and measurement sensor, the window moves farther away from the wafer and polishing surface. With such a movable window, the limitations of current polishing devices are overcome.



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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.6)
A	EP 0 824 995 A (APPLIED MATERIALS INC) 25 February 1998 (1998-02-25) * column 5, line 34 - column 9, line 23; figures 2-4 *	1,2, 16-19,35	B24B37/04 B24B21/04 B24B49/12 //H01L21/304, G01B11/00
A	US 5 609 511 A (MORIYAMA SHIGEO ET AL) 11 March 1997 (1997-03-11) -----		
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	17 November 2000	Eschbach, D	
CATEGORY OF CITED DOCUMENTS			
<input checked="" type="checkbox"/> X : particularly relevant if taken alone <input checked="" type="checkbox"/> Y : particularly relevant if combined with another document of the same category <input type="checkbox"/> A : technological background <input type="checkbox"/> O : non-written disclosure <input type="checkbox"/> P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons S : member of the same patent family, corresponding document	

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 99 30 1765

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 0824995	A	25-02-1998	US	5893796 A	13-04-1999	
			JP	10083977 A	31-03-1998	
			SG	54539 A	16-11-1998	
			US	6045439 A	04-04-2000	
US 5609511	A	11-03-1997	JP	7285050 A	31-10-1995	

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